



PC SYSTEMS FAQ

Q What is dual-channel memory, and how would it benefit me?

A One of the potential performance bottlenecks in a PC is how fast data can be shuttled back and forth between your processor and your computer's RAM. This speed is determined by the memory controller.

In older PCs, most memory controllers were single channel. As processors got faster, however, this single channel was unable to feed data from the RAM to the processor fast enough, often leaving the processor with nothing to do. This meant that even a computer with a fast processor could appear sluggish.

This problem was solved by adding a second channel and equipping memory controllers to deal with it. Dual-channel memory means that there are two parallel channels transferring data between the processor and the RAM simultaneously.

Memory slots on your motherboard are devoted to a specific channel. A typical motherboard has four memory slots: two for each memory channel. To use both channels, you need to have memory installed in both channels. Your PC will need two memory sticks, with one connected to each channel.

Motherboards are usually colour-coded to help you install memory: just install your memory in slots of the same colour to use both memory channels. To take advantage of both memory channels, you need a matching pair of DDR or DDR2 memory sticks with the same technical specifications; two 512MB DDR400 modules, for example.

Most modern motherboards support dual-channel memory; check the manual or manufacturer's website for your motherboard. Most motherboards also report the memory's configuration (dual or single channel) in the BIOS POST screen, which is displayed when you turn on your PC. Computers operate more slowly if memory is not installed in matched pairs, and a few may not function at all.

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Memory slots are colour-coded, so you know in which slots to install memory

REVIEW MEDIA CENTRE PC

SONY Vaio VGC-RC102

RATING ★★★★★

PRICE £1,173 inc VAT

SUPPLIER www.savastore.com

DETAILS vaio.sony-europe.com



The Vaio RC102's sleek appearance looks like something out of *2001: A Space Odyssey*. It doesn't come with a monitor but it does have stereo speakers and a responsive wireless keyboard with built-in track pad, as well as an uncomfortable wireless teardrop-shaped optical mouse.

The Sony interface can be used for watching and recording TV as well as viewing music, photos and videos stored on your hard disk. The software is easy to use, although playlists in Windows Media Player or iTunes formats aren't recognised. Unfortunately, you can't spontaneously create playlists or play music while viewing photos.

The flexible timer options for recording video are easy to use, although you must use the mouse and keyboard as there's no remote control with the PC. An electronic programme guide is available using a web browser, but requires a subscription from tv.co.uk. The RC102 comes with a single analogue TV tuner, so Freeview is out of the picture and you can't record one channel while watching another.

Although the RC102 can connect directly to a TV, Sony has provided a media receiver with remote that connects to your TV and receives content from the RC102 over a network. Given the RC102's bulky

size, this seems a good idea; unfortunately, the media receiver can't play content in Windows Media or DivX formats. This is puzzling since the RC102 itself has no problem playing such files.

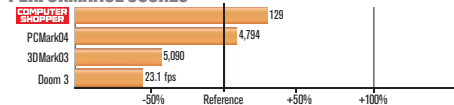
Although the media receiver has WiFi the PC doesn't, so you may have to buy a wireless adaptor to connect it to your wireless network.

When it comes to editing video, the RC102 is excellent. Its two 160GB hard disks give 320GB of storage in a RAID 0 array (striping), while the two FireWire ports make it easy to import video. The bulging software package covers all the bases with Adobe Premiere Standard, Adobe Photoshop Elements 3 and Sony's video-, image- and audio-editing packages, as well as Microsoft Works 8.

Although the RC102's general Windows performance is good, its 3D performance is sluggish due to the ageing GeForce 6600 graphics card. It's a fine though slightly pricy choice for people who need a powerful general-purpose PC and a way of beaming their media around the house.

Alan Lu

PERFORMANCE SCORES



✓ Good Windows performance; generous software bundle; attractive design

✗ Only one analogue TV tuner; poor 3D performance

SPECIFICATIONS Intel Pentium D820 processor, 1GB RAM, two 160GB hard disks, Sony DW Q28A +/-RW +/-DL, Sony DDU1615 DVD-ROM, 256MB nVidia GeForce Go 6600 graphics card. **Part code** VGC-RC102

HOTLIST DESKTOP PC

GLADIATOR Jupiter 6600GT

RATING ★★★★★

PRICE £799 inc VAT

SUPPLIER Gladiator 08456 444666

DETAILS www.gladiatorcomputers.com



Gladiator's Jupiter 6600GT is a powerful, well-built PC system that is easy to upgrade. It comes in a smart silver-fronted case. Its Logitech keyboard and mouse are particularly impressive: both are wired, but they are well made and comfortable to use.

Using an Athlon 64 3500+, 1GB of RAM and an nVidia GeForce 6600 GT graphics card, the Jupiter scored highly in our benchmark tests, with 121 in our application benchmarks and 41.8fps in Doom 3. The PC uses an SLI motherboard, so you can upgrade its graphics performance later by adding a second 6600 GT graphics card.

This is an excellent PC. Its processor, memory and graphics card are very good for the money,



and you can upgrade to SLI in the future. However, we have concerns about the return-to-base warranty. If you can't be without your PC, we recommend you look for one with onsite cover.

SPECIFICATIONS AMD Athlon 64 3500+ processor, 1GB RAM, 160GB hard disk, 128MB nVidia GeForce 6600GT graphics, DVD/+RW DL, DVD-ROM, 17" LCD

REVIEW **DESKTOP PC**

FUJITSU-SIEMENS Esprimo E5905

RATING ★★★★★

PRICE £864 inc VAT

SUPPLIER Fujitsu Siemens 0800 004003

DETAILS www.fujitsu-siemens.co.uk


The Esprimo E5905 is marketed as a green PC that is made to environmentally friendly standards and uses as little power as possible. It is very quiet; often the only audible noise comes from the optical drive spinning up. Even this can be controlled using software that changes the speed of the drive.

It's not as small as a Mac mini, but it still takes up less space than your average mini tower and is only around the same size as a couple of telephone directories. This means there are only two PCI slots and one 3½" drive bay, but it seems a reasonable trade-off. Removing the case to add internal upgrades is simple enough. There's a slot for a lock to prevent theft of valuable components and data.

The E5905 is aimed at bulk business buyers, but it is also available to individual consumers. The bundled software is designed for use in environments where the E5905 will be deployed in numbers, with remote management software and disk-cloning software similar to Norton Ghost included.

The fact that the E5905 is aimed at business users is also evident in the machine's limited RAM, hard disk and optical drive. The spongy keyboard and ball mouse are rather cheap. Although the nVidia Quadro NVS 280 PCI Express graphics card

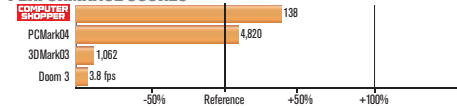
isn't built for gaming, it is capable of driving two displays at the same time. This is useful for palette-heavy and screen-hogging applications such as Excel, or financial trading and page layout software. The E5905 can also be ordered with integrated graphics and a single D-sub socket for £71 less.

Given this business-oriented approach, the powerful 2.8GHz Intel Pentium 4 D 820 dual-core processor may seem like overkill, especially given the scarcity of optimised software. Complex bespoke statistical and number-crunching software could benefit, once rewritten to take advantage. But it's fast enough to cope with office applications, and it's more likely to be you pausing for thought that slows things down, not the processor.

The E5905 did well in our video-encoding test, but the lack of FireWire ports and the small hard disk make it unsuitable for anything other than casual video editing.

Although the E5905 is aimed at companies, it will meet your needs if you're looking for a small and quiet yet powerful business PC. However, home users or less-demanding office users would be better served by cheaper alternatives.

Alan Lu

PERFORMANCE SCORES


✓ Quiet; small; dual DVI graphics card

✗ Small amount of memory and hard disk; poor 3D graphics

SPECIFICATIONS 2.8GHz Intel Pentium D820, 512MB RAM, 80GB hard disk, 64MB nVidia Quadro NVS 280, LG HL-DT-ST RW/DVD GCC-4481B DVD-ROM/CD-RW. Part code LKN:GBR-690111-104

HOTLIST **DESKTOP PC**

PC NEXTDAY Zoostorm 6607

RATING ★★★★★

PRICE £888 inc VAT

SUPPLIER sales@pcnextday.co.uk
DETAILS www.pcnextday.co.uk


This PC is an all-round entertainer with something for everyone. The 6600GT graphics card is capable of playing all the latest games with smooth frame rates, while the hybrid TV card can receive, record and pause live analogue or digital TV. A large 250GB hard disk and DVD writer are included for archiving favourite shows, and DVD software is provided for watching movies. All this media comes to life with the large 19" LCD monitor and stereo speakers provided.

The Zoostorm 6607 is no slouch in the power stakes either. Its AMD Athlon 3500+ processor is paired with a generous 1GB of RAM. This made short work of our Shopper benchmarks, producing

an overall score of 106. For entertainment or work the Zoostorm is a great system for the money. Our only reservation is the limited one-year return-to-base warranty; an onsite warranty is preferable for most users.

SPECIFICATIONS AMD Athlon 64 3500+, 1GB RAM, 250GB hard disk, 128MB nVidia GeForce 6600GT graphics, DVD+/-RW +/-DL and DVD-ROM, 19" LCD

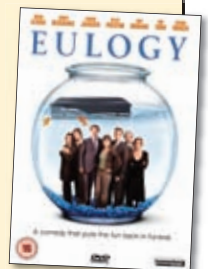


Our round-up of the best new gadgets and software

DVD Eulogy

RATING ★★★★★

PRICE £10 inc VAT

DETAILS www.play.com


Kate (Zoëy Deschanel) is not having a good week. First her grandfather dies. Then she is forced to spend time with her hugely dysfunctional family, including her pothead porn-actor dad (Hank Azaria), her sleazy uncle Skip (Ray Romano) and her terrifying aunt Alice (Debra Winger). Then her grandmother – between suicide attempts – asks her to read a eulogy at the funeral, and Kate begins to find out more about her Grandpa than she ever knew when he was alive. This odd but appealing black comedy veers between sly wit, slapstick and unashamed sentimentality, and just about manages to stay on the right side of entertaining. The disc includes a trailer, deleted scenes and a featurette.

Chris Miller

NEWLINK PRODUCTS USB 2.0 Hub with Card Reader/Writer

RATING ★★★★★

PRICE £25 inc VAT

SUPPLIER www.maplin.co.uk
DETAILS www.newlinkproducts.co.uk

Newlink's USB memory card reader doubles as a USB hub. The reader handles most card formats, with the exception of xD, the Reduced Size variants of MMC and SD and Memory Stick Duo. A door flap over the port connectors to protect the inside from dust would have been nice.

The hub has three USB ports, which is useful for plugging in peripherals without having to reach around the back of your PC. The reader worked well in our tests. However, you could buy a Trust CR-1200 memory card reader that supports more formats for £13, and a separate four-port hub for around £8, saving £4 in total.

Alan Lu





BYTE SIZE!



Our round-up of the best new gadgets and software

RAPTOR-GAMING M1

RATING ★★★★★

PRICE £20 inc VAT

SUPPLIER www.microdirect.co.uk

DETAILS www.raptor-gaming.com

Raptor-Gaming's M1 has an optical resolution of 1,600dpi and is more sensitive than most mice, which usually have an 800dpi resolution. It also comes with four low-friction feet, so it moves more smoothly, particularly when used with one of Raptor-Gaming's low-friction mouse mats. For first-person shooters, it means you can move more quickly and more accurately, giving you the edge in a deathmatch.

It's comfortable to hold, though it may be a little small for some and is only for right-handed people. The high optical resolution makes it more difficult to use in Windows; it's a shame there's no 800dpi button, as with Saitek's Gaming Mouse, to slow things down.

For the money it's basic, but it's got fast, sensitive movement so gamers will like it.

David Ludlow



CIRQUE SmartCat

RATING ★★★★★

PRICE £60 inc VAT

SUPPLIER www.pcwb.com

DETAILS www.cirque.com

If you don't like using a mouse, or don't have the movement to use one, Cirque's SmartCat could be just what you need. This touch pad connects to your PC via USB and works just like a notebook's cursor controller.

The SmartCat is sensitive and precise, due to its large size. It does everything you could want it to do single-handed. The bottom and right of the panel let you scroll around windows, like a scroll-wheel on a mouse. The left zooms in on supported applications, the top can move backwards and forwards on your web browser and the top-right activates a right-click.

The SmartCat is a little expensive, but it's extremely well thought out and ideal for those who don't want to or can't use a mouse.

David Ludlow



REVIEW DESKTOP PC

HP Pavilion w5161

RATING ★★★★★

PRICE £860 inc VAT

SUPPLIER www.hpstore.hp.co.uk

DETAILS www.hp.co.uk

HP's w5161 is supplied without a monitor and is aimed at those looking to upgrade. Its inoffensive silver case features two hatches on the front. The right hatch houses USB2, FireWire, microphone and headphone ports, and the left accommodates a removable 300GB Personal Media Drive, which can connect to another PC via USB. Combined with the internal 160GB hard disk, this gives the Pavilion a huge 460GB of storage. The Personal Media Drive is large and heavy, though, and requires a separate power adaptor to connect to a non-HP PC.

The Pavilion has two optical drives, one of which is a LightScribe DVD writer. LightScribe labelling is probably better for the longevity of your DVDs than handwriting or stick-on labels, but it is quite slow, with speeds of only 8X DVD-R and 2.4X DVD+R DL. Writing the LightScribe label takes around 50 minutes. HP should have junked the DVD-ROM drive in favour of a second, faster non-LightScribe writer to give the best of both worlds.

The Pavilion is unsuitable as a gaming machine; its ATI Radeon X600 graphics card managed only 10.6fps in our Doom 3 test. It did better with non-gaming tasks, however; its score in our video-



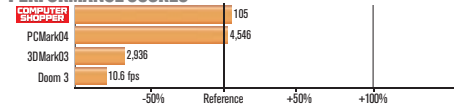
encoding test was particularly good, due to the fast Pentium 4 630 processor. This processor also supports 64-bit instructions, so you can upgrade to the 64-bit version of Windows when more applications are available.

The Pavilion w5161 doesn't include a monitor or speakers, so it's best for users with existing peripherals who want to upgrade their PC. However, at this price we'd expect a monitor to be included, and the w5161 isn't very good value. There is a wireless networking adaptor included that can connect to 802.11b, g and even a networks. There is also a decent software spread featuring a gaggle of Microsoft titles, including Word 2002. The bundled ball mouse is poor, though.

If it were cheaper, the Pavilion would be a great upgrade for those who already own a monitor and don't play games. As it stands, it's just too expensive to recommend, despite its neat touches and large amount of storage.

Alan Lu

PERFORMANCE SCORES



✓ Lots of storage space; LightScribe DVD writer; decent overall performance

✗ Unimpressive 3D performance; limited expansion options; no monitor

SPECIFICATIONS 3GHz Intel Pentium 4 630 processor, 1GB RAM, 160GB hard disk, 300GB removable hard disk, 256MB ATI Radeon X600 graphics, DVD+/-RW +DL, DVD-ROM. Part code EC511AA

HOTLIST DESKTOP PC

PC NEXTDAY Zoostorm 5-7401 Gaming PC

RATING ★★★★★

PRICE £1,487 inc VAT

SUPPLIER sales@pcnextday.co.uk

DETAILS www.pcnextday.co.uk

PC Nextday's case isn't really to our taste; its red eyes and plastic horns were the subject of derision in *Shopper* Labs. Fortunately this PC is redeemed by its performance.

The 5-7401 uses two nVidia GeForce 7800GT graphics cards in SLI mode. You also get two Maxtor 200GB hard disks in a RAID 0 array. This helps games load faster, but if one disk fails you'll lose all your data.

The 19" AOC monitor performed well in most of our image tests, although backlighting was slightly uneven. The Sound Blaster Audigy ZS card and set of Creative 7.1 surround-sound speakers make 3D games sound more realistic,



but the wireless mouse and keyboard are less impressive inclusions.

The Athlon 64 4000+ processor scored 126 overall in our *Shopper* benchmarks, and in 3D tests the 5-7401 left the competition in its wake. This PC will run any game in glorious detail.

SPECIFICATIONS AMD Athlon 64 4000+ processor, 1GB RAM, 2x 200GB hard disks, 2x 256MB nVidia GeForce 7800GT graphics, DVD+/-RW DL, DVD-ROM, 19" LCD



CHOOSING A...

PC SYSTEM

Follow our simple step-by-step guide to buying a PC and get the perfect system for your needs

FILL IN YOUR SPECS HERE

(Recommended minimum in grey)

PROCESSOR: Athlon 64 3000+

MEMORY: 256MB DDR

HARD DISK: 120GB

STORAGE: 52X CD-RW/16X DVD
combo drive

SOUND: Integrated

SPEAKERS: Stereo

GRAPHICS: Integrated

MONITOR: 17" LCD

EXTRAS: 56K modem

CONNECTORS: 4x USB2.0, network

SOFTWARE: Windows XP Home Edition

BASICS: Keyboard, mouse

1

The minimum specification of PC we recommend, shown in grey opposite, is a good starting point when working out your ideal system. This PC would cost around £500 and is perfectly capable of running everyday office, multimedia or education software, as well as doing anything on the internet. But it's an unexciting PC. It will be able to play DVD movies, but they won't sound too impressive and games are a total no-no.

2

If you're interested in editing your own movies, you'll need a DVD rewriter. Make sure that you get one that supports both +R and -R formats. It's also worth getting one that will write two-layer discs, as this lets you squeeze twice as much information on a DVD.

There's not much difference in price between the different drive speeds, so we recommend getting one that can write DVD+R and DVD-R at 16X, and DVD+R DL at 4X. If you'll be doing a lot of video projects and disc writing, upgrade to a 200GB hard disk as a minimum.

3

Interested in games? Then upgrade to 512MB or 1GB of memory and a 200GB disk and get a graphics card. Budget cards based on the GeForce FX 6600 graphics processor or Radeon X700 will cope with this year's games, but to play next year's just as smoothly (and enjoy gorgeous graphics today) you'll want anything up to a GeForce FX 7800GTX or Radeon X850XT. You'll also need a faster processor.

4

Which faster processor? Well, faster AMD processors such as the Athlon 64 3400+ are good value. An Athlon FX-based system will cost £300 more but offers much better performance. The alternative is a PC based on Intel's Pentium 4 processor. These are also pricier, but many people feel reassured by the Intel brand, and the fastest P4s always do well in our performance tests.

5

If you're really not interested in games you can definitely live with integrated or cheap graphics, but there are plenty more reasons to upgrade the memory, hard disk or processor.

If you'll use your PC for serious DTP, music or photo editing you need the same kind of processor, memory and disk as for games. For video editing, consider getting two hard disks, perhaps in a RAID array.

6

A quality sound system will enhance all manner of PC activities. To hear the surround soundtrack of a DVD at its best, you'll need a quality 5.1 speaker system. Games can also use such a system to throw sound effects around you. If you're interested in neither games nor DVDs (or don't want to trail wires all around the room), go for a quality stereo pair with a subwoofer to boost the bass instead.

If you're interested in music or want better-quality sound, you'll need to invest in a dedicated sound card. As well as providing enhanced sound, such as Environmental Audio eXtension (EAX), which tweaks the acoustics to make sound appear to be playing in different environments, you'll get higher-quality outputs and more inputs.

7

Although 17" LCD screens save on desk space and look stylish, the limited display size means some may find onscreen text hard to read. A 19" LCD will cost around £50 more, has the same resolution (1,280x1,024) and is easier on the eye. It's better for those who want to edit large photos, documents or spreadsheets, run two applications side by side, or just look important. Twenty-inch LCDs are available from £400 and have a higher resolution (1,600x1,200).

8

The standard set of connectors can be usefully improved with extra USB2 ports, to which most run-of-the-mill PC gadgets attach, and a FireWire port, for fancy gadgets including digital video (DV) cameras.

9

Windows XP Home Edition is preinstalled on most new PCs. Any extra software bundled should be assessed critically. It may be that you'll never actually use it. But equally, you may happen across a PC that includes software you'd otherwise have paid for, in which case you'll almost certainly save lots of money by having it preloaded, although you won't get technical support included.

10

Money left over? A TV card will let you watch television on your PC screen and record programmes to your hard disk, or capture analogue video from a camcorder. Rather than splashing out on an extended warranty, pay extra to get the make of PC your friends or colleagues swear by.

